



Materials Engineering Branch

TIP*



No. 095 Protective Measures for Flammable Materials

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During the STS payload/hardware design phase, the designer may be forced to select a flammable nonmetallic material(s) because of unique material properties necessary to meet specific application requirements. In such cases, the designer must be aware of the potential flammability hazard associated with the selection and take the necessary steps to eliminate or reduce the hazard to a low risk level. Some methods that have been successfully used to accomplish this are:

- Over coating a flammable material with a nonflammable material.
- Covering a flammable material with an acceptable nonflammable material. An example of this is a thermal blanket design that incorporates flammable Dacron mesh or Mylar film covered with nonflammable Kapton film or nonflammable Beta Cloth.
- Ensuring that flammable materials are not used within 6 inches of an identified potential ignition source.
- Ensuring that flammable materials are not used within 6 inches of another flammable material.
- Creating fire barriers with the use of Beta Cloth (<12 oz. per yard). Aluminum tape may also be used.
- Use of heat sinks to inhibit fire propagation (e.g., metal surfaces greater than 50 mils thick usually inhibit burning in paint).
- Ensuring that wire bundles are properly wrapped, tied and supported with nonflammable materials to prevent launch damage or cut through.
- If possible, configure materials that could burn so that they do not exceed 20 square inches without a firebreak.

NOTE: Flammable materials should have a quiescent burning mode, i.e., they should not sputter, spark or drip flaming particles.

Adhesive labels having an area of less than 10 square inches or inks do not constitute a significant flammability hazard.

REFERENCE: NASA-STD-6001, “Flammability, Odor, Offgassing and
Compatibility Requirements & Test Procedure for Materials in
Environments that Support Combustion”